



1929.

—
WESTERN AUSTRALIA.

REPORT

OF THE

PUBLIC HEALTH DEPARTMENT

FOR THE

YEARS 1927 AND 1928.

Presented to both Houses of Parliament by His Excellency's Command.

[FIFTH SESSION OF THE THIRTEENTH PARLIAMENT.]

PERTH :

BY AUTHORITY : JOHN LEE, ACTING GOVERNMENT PRINTER.

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1929.

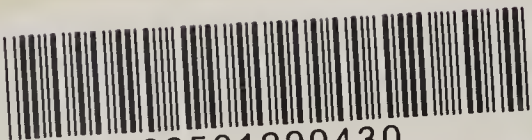
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Report of the Public Health Department.

The Hon. the Minister of Public Health.

I have the honour to submit herewith the Annual Report of the Health Department for the two years 1927 and 1928. A Report upon the hospitals under the control of the Department was separately compiled and submitted while the Hospitals' Bill was under discussion.

As you are aware, for six months of 1927 I was absent from the State and from Australia, having received an invitation from the International Health Board of the Rockefeller Foundation to visit the United States to observe public health methods there.

Every facility was given me to make acquaintance with the subject as practised in the States, with, I am convinced, considerable advantage to myself, and I trust indirect benefit to the State.

My itinerary extended very widely amongst an enormous population, where I was enabled to see the best and the worst that the Union has to show in preventive medicine work. At one time I saw the best that modern knowledge can effect in model sanitation and at another, conditions so primitive and devoid of organised control as to be quite inadmissible in Australia. I saw hospitals for the care of infectious cases where equipment and comfort were provided with a lavish hand, but I also saw large populated areas unprovided with infectious hospitals at all.

Public health problems in the United States do not differ materially from those in Australia, but they are modified to varying extent by climate, immensity of population, multiplicity of nationalities, mental outlook and financial resource. Public education and health propaganda are great factors there and enormous sums of money are spent in these directions.

Continuity of effort and stability of organisation are often interfered with by the fact that many public health officials have no permanency of tenure in office, many being appointed for a limited term coinciding with that of the mayor of the city they serve.

I noted, however, amongst the people a more general possession of a public health conscience than one finds in Australia and a greater general knowledge of the principles of hygiene amongst the mass of the people.

One is struck by the public confidence placed in the advice of their professional officers and their ready and anxious submission to inoculation, vaccination and protective measures generally.

The following comparative example will illustrate my meaning:—

During a new gold rush in Western Australia some years ago, an organised effort was made to have protective inoculation against typhoid fever carried out amongst some 2,000 men on the field. Lectures were given, the area was placarded with educative and advisory posters, and an inoculation depot established. Only twelve men responded to the invitation out of 2,000.

In the case of a town I visited in one of the States of America, there had been a slightly increased incidence of typhoid fever, as a result of which the Local Health Authority advised inoculation and opened several depots for its performance. Within a period of thirty days 50,000 people had presented themselves and received the necessary three injections of typhoid vaccine—30,000 at clinics and 20,000 from private practitioners.

In the same manner toxin-antitoxin inoculation of children against diphtheria is accepted almost everywhere with the utmost confidence and, it seems, with considerable diminution in the incidence and mortality of that disease. In a sparsely populated district in the flood area of Mississippi, I saw children receiving this inoculation at the hands of a public health nurse from the running-board of a motor car.

The public health nurse occupies a very high place in the public health organisation in the States, and her duties are very numerous. In fact she appears to have largely usurped the functions of the sanitary inspector.

She has this advantage, that on account of her very close and intimate association with the private life of many of the people she is able to carry the principles of hygiene into the home itself.

Almost every city of any size in the United States has set its face firmly towards the attainment of pasteurisation of the whole of its milk supply, and quite a number have actually attained to that ideal. Everywhere one sees such milk supplied in sealed bottles of varying sizes, and feels, after visiting the well-equipped and well-controlled pasteurisation plants, that here at last is a safe milk supply.

Most of these cities can point to a marked lowering of infectious disease incidence and an almost complete absence of the milk-borne epidemics that previously were only too frequent.

Although, on account of excellent purification plants, most of the water supplies are safe, nevertheless in numerous instances the water is perforce taken from polluted sources—sources, even, where only a few miles up-stream crude sewage is entering.

By combined systems of sedimentation, filtration and chlorination, however, good potable and safe drinking waters are turned out, though failure of these purification plants might at any time be fraught with disastrous results.

Venereal disease legislation is on the statute-books in most of the States, but I was unable to find very much evidence of its enforcement. Venereal clinics are provided for treatment purposes, but there was not much organised following-up of defaulters.

As regards school medical inspection, this for two main reasons did not strike me as far-reaching enough in many places. Firstly, the law does not permit the removal of a child's clothing, and, secondly, the medical officer only surveys those children picked out by the school nurse. It is most probable that under these conditions many defects are missed.

There is, however, considerable attention given to the pre-school child, and these are frequently brought to the school, prior to admission, for vaccination toxin-antitoxin inoculation and for the detection of defects.

School dental work is well done in the States and in fact, the whole population seems to have developed a dental conscience to a remarkable degree. One has seldom seen such a high percentage of well cared-for and scrupulously clean teeth amongst the general community, and one almost wonders whether the chlorination of the water supplies has brought about some bleaching effect upon them. Possibly a natural vanity is responsible.

As regards diet in America, one is struck by the small amount of beef and mutton apparently consumed, and the great amount of poultry, pork, salads, fruit and ice cream which enter into the daily menu. Iced water is drunk at every meal, and for some reason, even to the stranger, seems to become a necessity in a very short time.

Ice-cream, and very good ice-cream too, seems to form an integral part of at least two meals per day and is also supplied regularly to patients in hospitals. It is regarded, and with truth, as an excellent way of supplying portion of the butter fat needs of the community.

Very determined efforts are being made everywhere in the States to reduce the wastage of life resulting from tuberculosis and cancer, and there are many fine organisations at work in these directions.

The system of individuals seeking an annual medical overhaul whether there appears to be cause for this or not is very popular in America and is, with-

out doubt, a very wise course to adopt. The slogan appears to be "If your motor car, why not yourself." This example might well be followed in Australia.

It appears to be recognised also that there is economy in providing for the medical supervision and general welfare of operatives and employees in all large industrial and commercial establishments, and there is ample evidence to show that money so spent gives great returns in efficiency and in hours off duty saved to industry. The facilities placed at the disposal of the employees of the Metropolitan Life Insurance Company of New York can hardly be equalled anywhere in the world.

This company also provides for an annual medical examination of all policy holders of over £100 and claims that since the institution of this measure its profits have been considerably increased, owing to deferred death claims. It also runs a visiting nursing service for the benefit of its industrial policy holders.

If I have any criticism to make of public health organisation in the United States it is that, in my opinion, there is a tendency to over-specialisation of professional officers which is, in the first place, expensive, and which, by confining an officer within a circumscribed or water-tight compartment must tend to narrowness of outlook. It seems to me that each individual professional officer, to be of greatest value, needs a comprehensive view of the whole field of preventive medicine constantly before him, in order that he may link up one activity with another and modify or co-ordinate any special work accordingly.

There appeared to me to be amongst the various specialists in a department a "splendid isolation" of each, to such an extent that he knew not what the others did nor cared. He was wholly consumed by and interested only in his own branch of work. It is true that in some departments a weekly consultation was held of all these officers when points of interest were brought up and discussed, but it struck me that there was insufficient knowledge of the other fellow's job and his results: so that one could not well competently relieve another in case of need or in a local or national emergency.

I have nothing but praise for the splendid organisation, hard-working efficiency and superb recording and statistical systems I saw, but this conviction of over-specialisation came early and stayed with me throughout.

Although I have already, in separate reports, gone into more detail as regards certain of my observations, I have thought it advisable to include some reference to impressions in this report.

In conclusion, I should like to officially record here my appreciation of the generosity, unfailing courtesy and ready assistance I received throughout at the hands of the officers of the International Health Board of the Rockefeller Foundation, and all public health officials I met during my travels.

VITAL STATISTICS.
Western Australia.

								1926.	1927.	1928.
Mean Population—										
Males								201,048	207,133	215,918
Females								173,949	177,878	183,164
Total								374,997	385,011	399,082
Births—										
Males								4,306	4,366	4,493
Females								3,995	4,116	4,211
Total								8,301	8,482	8,704
Birthrate—										
Per thousand of population								22·1	22	21·8
Deaths—										
Males								2,131	2,115	2,229
Females								1,219	1,278	1,411
Total								3,350	3,393	3,640
Death Rate—										
Per thousand of population								8·9	8·8	9·1
Natural Increases—										
Rate per thousand of population								13·2	13·2	12·7
Infantile Mortality per thousand Births—										
Metropolitan Area								58·9	57·7	62·1
Rest of State								42·3	37·01	36·8
Whole State								49·3	45·8	48

Birth, Death, and Infantile Mortality Rates and number of Still Births 1919–1928.

		Birth Rate.	Death Rate.	Infantile Mortality.			Still Births.	
				Whole State.	Metropolitan Area.	Rest of State.	Whole State.	Metropolitan Area.
1919	...	21·7	11·2	61·3	65·2	57·1	218	...
1920	...	24·7	10·3	66·1	75·9	54·4	248	...
1921	...	23·4	10·4	78·3	79·1	77·3	225	...
1922	...	24·0	9·3	57·7	60·1	50·9	248	...
1923	...	22·6	8·4	56·2	61·7	49·9	222	...
1924	...	23·1	9·1	49·9	61·5	41·6	251	105
1925	...	22·2	9·0	56·8	72·5	45·6	264	120
1926	...	22·1	8·9	49·3	58·9	42·3	228	91
1927	...	22	8·8	45·8	57·7	37·01	214	122
1928	...	21·8	9·1	*48·02	62·1	36·8	173	141

* Exclusive of still-births.

Comparison of Infant Mortality and General Death Rate.

		Infant Mortality.			General Death Rate.		
		1926.	1927.	1928.	1926.	1927.	1928.
New Zealand	...	39·8	37·74	36·18	8·74	8·54	8·49
Western Australia	...	49·3	45·8	48·02	8·9	8·8	9·1
New South Wales	...	57·6	54·96	54·89	9·66	9·59	9·35
Victoria	...	55·6	56·1	55·6	9·63	9·71	10·11
Queensland	...	50·4	54·5	45·5	9·39	9·06	8·77
Tasmania	...	46·5	53·0	64·0	9·05	9·68	10·06
South Australia	...	44·6	53·69	47·51	8·73	8·98	8·92

The tables show little variation in the general death rate for the past three years, whilst New Zealand continues to hold pride of place. Western Australia and South Australia are close behind, with, for 1928, Queensland heading these.

As regards infantile mortality, New Zealand has a very considerable lead, with South Australia second in 1926, Western Australia second in 1927, and Queensland second in 1928. Tasmania shows an extraordinary increase to 64 in 1928 which doubtless is accounted for by some unusual cause, whilst the general death rate also shows a marked increase in that State.

It is obvious that an unusual prevalence of one of the infectious diseases, especially fatal to infant life, may in any one year and in any State considerably alter its comparative position as regards infant mortality and the States not so ill-favoured have a distinct advantage.

The position in this State as regards infantile mortality, though capable of much improvement by comparison with New Zealand, is very satisfactory, in that the figures for 1927 and 1928 show a still further reduction upon the figure for 1926, which was the lowest on record.

Perhaps it is not too early to give the credit for this to the special training now being given to midwives in mothercraft and to the excellent work being carried on at Infant Health Centres.

There is food for thought, however, in the fact that whilst the number of still-births for the whole State is showing a marked reduction, the number in the metropolitan area has steadily increased during the last two years. This, in spite of the greater facilities for pre-natal examination and advice in the metropolitan area, is difficult to explain.

The birth-rate continues to decline slightly.

INFECTIOUS DISEASES.

Typhoid Fever.

The incidence of typhoid fever continues to decline in a most satisfactory manner and though the figures for 1927 showed a slight increase on those of the previous year, the figures for 1928 must be very far below any ever previously recorded.

The case mortality was, however, rather higher than usual.

—	1925.	1926.	1927.	1928.
Cases notified	223	143	160	113
Deaths	14	15	10	12
Case mortality (per cent.)	6·3	10	6·25	10·6
Deaths per 1,000 of population	0·04	0·04	0·03	0·03
Percentage of total deaths	0·42	0·46	0·30	0·33
<i>Districts principally affected—</i>				
Metropolitan Area ... ..	...	...	70	54
Kalgoorlie ... ..	...	...	4	8
Boulder ... ..	...	...	5	9
Gnowangerup ... ..	...	...	6	...
Albany ... ..	...	...	4	...
Jarrahdale ... ..	...	...	5	1
Geraldton ... ..	...	...	18	9
Meekatharra ... ..	...	...	18	...
Narrogin ... ..	...	...	...	4
Bridgetown ... ..	...	...	3	7

Dysentery.

Of this disease 26 cases were notified in 1927 and 17 in 1928, both figures being less than that for 1926. Most of these cases were of the bacillary type, the Flexner organism being that most commonly found here.

A few cases of recurring dysentery of amoebic type occur each year in men who contracted the affection on active service.

Diarrhoea and Enteritis (under two years).

—	1925.	1926.	1927.	1928.
Deaths ...	138	96	93	124

The low figure (96) for deaths under this heading in 1926 was slightly improved upon in 1927 when only 93 deaths occurred. The year 1928, when 124 deaths were recorded, shows a regrettable increase again. It must be stressed that this is largely a pre-

ventable disease and following the education available at Infant Health Centres, should not occur.

The table below shows the infantile mortality from diarrhoea only, since 1919, and whilst the figures show considerable variation and a more definite tendency to remain down during the past three years, there is not the marked fall one expects following the establishment of Infant Health Centres:—

Year.	Number of Births Registered (exclusive of still-births).	Number of Deaths from Enteritis under one year.	Per 1,000 births.
1919	6,937	96	13·8
1920	8,149	169	20·7
1921	7,807	181	23·4
1922	8,131	117	14·3
1923	7,854	113	14·4
1924	8,301	82	9·9
1925	8,185	112	13·7
1926	8,301	76	9·1
1927	8,482	73	8·6
1928	8,704	90	10·3

Scarlet Fever.

—	1924.	1925.	1926.	1927.	1928.
Cases notified	66	123	225	282	350
Deaths	1	...	1	2	2

This disease has shown during the two years under review a marked increased incidence amounting to epidemic proportions. Several years of comparatively low prevalence generally appear to portend such a happening, and it would seem that this disease remains largely beyond our control by any other means than immunisation. There is now ample evidence that immunity to this disease can be established by the injection of scarlet fever toxin, but as the maximum incidence of the disease falls in the first years of school life, immunisation must be carried out very early to be of any value in control. The disease is, however, so mild in type in Australia, and especially in this State, that the question arises whether this immunisation is sufficiently justified.

The disease affects mainly the metropolitan population, though small outbreaks have occurred in widely separated districts in country areas.

During each of the years under review two deaths were ascribed to this disease.

Diphtheria.

—	1924.	1925.	1926.	1927.	1928.
Cases notified	511	354	256	273	639
Deaths	14	6	11	6	13
Case mortality per cent.	2.7	1.7	4.3	2.9	2
Per cent. of total deaths	0.5	0.18	0.33	0.18	0.36

Whereas the year 1927 showed only a slight increase in prevalence over the previous year, 1928 showed the highest incidence of this disease since 1921.

Case mortality was for 1927, 2.9 per cent., a figure lower than that of the previous year, and for 1928 2 per cent., a very satisfactory figure.

The outbreak in 1928 was remarkable for the very large number of cases of nasal diphtheria that occurred, many of these showing no infection of the throat whatever.

Evidence is accumulating that considerable value attaches to the use of toxin-antitoxin as a prophylactic measure in diphtheria, and in the wholesale use of this measure Australia appears to be behind most other countries. It is a most unfortunate thing that a set-back in this regard was experienced in this country by the tragic happenings at Bundaberg, in Queensland, which naturally had the effect of seriously undermining public confidence in the safety of the procedure. According to the Royal Commission's report, however, the tragedy resulted not as an actual result of the administration of toxin-antitoxin, but to contamination of it by extraneous bacteria accidentally introduced and which might have occurred as a result of the administration of any serum not containing preservative, and used on several occasions after opening.

It is understood that all toxin-antitoxin now issued by the Commonwealth Government contains preserva-

tive, in which case there should be no repetition of that unfortunate happening, but as a further precaution it is undoubtedly advisable in the use of such preparations that only the quantity required should be opened or any surplus rejected.

Public Health authorities appear to be powerless to reduce the diphtheria incidence by other means at their disposal, so that it would seem that the time has come for a concerted and vigorous immunisation campaign if only public confidence can be regained. J. Graham Forbes, in a recent report issued by the Medical Research Council, has pointed out that in Scotland, where the immunisation rate is 17 times greater than in England and Wales, there is a very much greater reduction in diphtheria incidence amongst immunised school children and a total absence of mortality. On the other hand, hundreds of thousands of children in the United States of America have been inoculated with perfect safety and everywhere the incidence and mortality of the disease is said to be declining as a direct result.

One unfortunate result of the Bundaberg tragedy has been the refusal by some of antitoxin treatment for children suffering from diphtheria. Though one sympathises with the fears of these, it must be definitely stressed that this form of treatment has stood the test of time, and antitoxin used in treatment must not be confused with toxin-antitoxin used for immunisation.

If antitoxin is discontinued in treatment then there will be many more unnecessary deaths than were caused at Bundaberg, and no one, however great his objection, has any right to take the risk which failure to accept antitoxin in diphtheria involves for the patient.

The Schick Test and immunisation against Diphtheria.—Diphtheria has always been a serious problem to Health Officers, mainly for the reason that ordinary sanitary measures which have done so much to reduce the incidence of the intestinal diseases have had little effect upon diphtheria. The development of the Schick test for susceptibility and the immunisation of susceptible individuals by toxin-antitoxin have, however, raised our hopes that an efficient means of reducing, if not eradicating diphtheria is now at hand. Nearly all children at birth are apparently resistant to diphtheria, this being no doubt due to antitoxin in their blood derived from the mother, but this immunity is only temporary and usually has disappeared at the age of six months. From six months onwards through school age, a large number of children are susceptible to diphtheria, this susceptibility then again declining as they grow older. The Schick test, which is performed by introducing a small quantity of diphtheria toxin into the superficial layers of the skin, may be used to indicate, by means of a reaction in the area injected, whether or not a person is susceptible to diphtheria. If there is present in the individual's blood sufficient antitoxin to neutralise this toxin, there is no reaction and the test is said to be "negative"; moreover, the person is not likely to contract diphtheria. If he is susceptible then a red, slightly inflamed area occurs, the so-called "positive test," which indicates that the individual is likely to develop diphtheria should he meet with the infection.

It has been shown, in the case of a susceptible individual who gives a positive Schick test, that this positive can be converted into a negative, and the individual become non-susceptible to diphtheria, by

the administration of toxin-antitoxin in three doses at weekly intervals.

The immunity to diphtheria from this inoculation is not immediately established, but resistance gradually develops and increases during the following two or three months until complete and permanent immunity is obtained. In a few cases the one series of injections is not sufficient, and another course is necessary.

Some authorities, recognising that a very high percentage of children between the ages of six months and eight years are susceptible, dispense with the Schick test entirely and immunise all children between those ages without a preliminary test. This is being largely adopted in America.

Districts Affected.—The districts mainly affected by diphtheria during the years under review were as follows:—

	1927.	1928.
Metropolitan Area ..	194	460
Kalgoorlie	18	21
Boulder	12	3
Albany	12	3
Narrogin	1	18
Katanning .. ..	..	77 (including many carriers)
Mullewa .. ..	..	8

Measles.

This disease not being notifiable in Western Australia, deaths only are available as an index of prevalence. There has been, however, during 1928 a fairly widespread prevalence of the disease, which has resulted in three deaths being recorded.

It is to be noted that no deaths occurred from this cause during the three previous years. A disquieting feature has been the large number of middle-ear infections that have occurred during the course of the disease.

	1924.	1925.	1926.	1927.	1928.
Deaths	38	...	...	...	3
Percentage of total deaths	1.2	...	...	...	0.08

Whooping-cough.

This disease has also shown an increased mortality during 1927, with a subsequent fall again in 1928. As in the case of measles, whooping-cough is not notifiable, so that deaths again constitute the only record of prevalence.

The deaths in the case of both measles and whooping-cough generally result from a complicating pneumonia, and strict confinement to bed during the acute stages should prevent many of these.

	1924.	1925.	1926.	1927.	1928.
Deaths	24	15	19	24	7
Percentage of total deaths ... ..	...	0.8	...	0.7	0.2

Tuberculosis.

	Cases notified.	Deaths.	Deaths per 1,000 of population.	Percentage of total deaths.
Tuberculosis of Lungs—				
1919	467	289	0.89	8.05
1920	442	259	0.77	7.6
1921	424	277	0.83	7.9
1922	387	256	0.75	8.08
1923	361	216	0.62	7.3
1924	381	228	0.63	7.0
1925	403	259	0.70	7.8
1926	415	252	0.67	7.5
1927	409	231	0.60	6.8
1928	395	282	0.71	7.8
Other forms of Tuberculosis—				
1919 ... ..	...	24	0.074	0.668
1920 ... ..	...	29	0.086	0.85
1921 ... ..	...	23	0.069	0.66
1922 ... ..	...	29	0.085	0.91
1923 ... ..	...	16	0.046	0.54
1924 ... ..	...	22	0.061	0.67
1925 ... ..	...	29	0.079	0.87
1926 ... ..	...	18	0.048	0.53
1927 ... ..	...	19	0.049	0.56
1928 ... ..	...	33	0.082	0.91
All forms of Tuberculosis				
1919 ... ..	...	313	0.967	8.71
1920 ... ..	...	288	0.86	8.50
1921 ... ..	...	300	0.90	8.62
1922 ... ..	...	285	0.84	9.00
1923 ... ..	...	232	0.66	7.84
1924 ... ..	...	250	0.69	7.67
1925 ... ..	...	288	0.78	8.69
1926 ... ..	...	270	0.72	8.59
1927 ... ..	...	250	0.69	7.37
1928 ... ..	...	315	0.78	8.65

The two years under review show a slight reduction in the number of cases of pulmonary tuberculosis notified. Deaths from all forms of tuberculosis and from phthisis show a slight diminution in 1927, but an increase in 1928.

Hitherto, phthisis or tuberculosis of the respiratory

system alone has been notifiable to the Department when first seen, and other forms of tuberculosis have been reported annually only, by medical practitioners.

Following a recommendation of the Federal Health Council all forms of tuberculosis are to be notified so soon as they are diagnosed.

Influenza, Bronchitis, and Pneumonia.

	1923.	1924.	1925.	1926.	1927.	1928.
Deaths from—						
Influenza	35	48	38	40	25	40
Broncho-Pneumonia	83	99	95	54	87	117
Pneumonia	147	157	193	122	133	152
Bronchitis... ..	33	50	53	43	52	48

There is nothing in the figures for deaths from these respiratory diseases to suggest any departure from the form of influenza experienced each year since the great pandemic of that disease in 1919, nor is there any sign of an approach to the conditions which existed that year.

*Infantile Paralysis.
(Acute Anterior Poliomyelitis.)*

	1924.	1925.	1926.	1927.	1928.
Cases notified	3	19	13	2	9

This disease continues to remain sporadic in its incidence, a few cases occurring annually with no tendency to epidemicity. The two years under review both record figures materially lower than the two previous years.

Epidemic Cerebro-spinal Meningitis.

	1924.	1925.	1926.	1927.	1928.
Cases notified	2	2	...	2	1

This disease is almost conspicuous by its absence in the State, and few cases have occurred since the war period.

Malaria.

	1924.	1925.	1926.	1927.	1928.
Cases notified	29	26	18	11	14

This disease occurs almost exclusively north of Carnarvon, except for the occasional recurrent attack met with in the metropolitan area amongst persons who have contracted the disease elsewhere.

The figures shown cannot accurately represent the number of cases actually occurring during the period, but only those seen by medical practitioners. There must be many cases in the North-West of this State who have not sought or have been unable to obtain medical aid.

Dengue Fever.

Of this disease, 29 cases were notified in 1927 and 8 in 1928. Dengue fever is confined to the same areas as malaria in this State, notifications being mainly received from Broome, Derby and Wyndham. As in the case of malaria, the figures cannot be a true index of the prevalence of the disease.

Beri-Beri.

	1923.	1924.	1925.	1926.	1927.	1928.
Cases notified	15	33	17	17	11	...
Deaths	15	17	4	12	3	...

Eleven case of beri-beri were notified in 1927 and none in 1928. These cases occur exclusively in Asiatics engaged in pearling, and in many instances it would seem that the disease has been contracted before arrival here.

Since the disease has been definitely ascribed to Vitamin B deficiency, and can be prevented by proper dietary, it should no longer occur. The absence of cases during 1928 points to a recognition of this fact.

Leprosy.

This disease continues to crop up from time to time mainly amongst aboriginals in the North-West of the State. Four cases were brought to light in 1927, but none in 1928.

Negotiations have been opened with the Federal Government which may culminate in that Government taking charge of this State's lepers at a lazaret now being established at Darwin. Some difficulties in regard to the transport of cases may arise which, it is hoped, will not be insurmountable.

It is to be hoped, moreover, that some co-operative plan may be devised whereby the Governments concerned will be able to assure a more organised and regular examination of the natives of North-West Australia, the Northern Territory, and Northern Queensland for the detection of leprosy and other diseases. A report upon such a proposal is already being prepared by a Commonwealth officer.

Endemic Typhus (Brill's Disease).

Cases of Brill's disease have continued to make their appearance in the metropolitan area of Perth,

and more latterly in Geraldton. Fourteen cases were notified in 1927 and 39 in 1928. The cases continue to occur sporadically, showing no association one with the other, but under conditions which continue to suggest an association with produce likely to harbour rodents, or with premises where these are prevalent.

Though mild, and showing none of the virulence of true typhus, the disease may be disquieting to the patient and his relatives, and some patients for a period appear very toxic and undergo quite a protracted convalescence.

There is undobutedly need for thorough investigation of this disease, especially as to causation and transmission, which problems continue to baffle investigation wherever the disease occurs.

Puerperal Sepsis and the Puerperal State.

Seventeen cases of puerperal sepsis were notified to the Department in 1927 and sixteen in 1928, yet the deaths recorded from that cause by the Statistician were 18 and 20 respectively.

The subjoined table shows the number of deaths due to childbirth and to puerperal septicaemia since 1919:—

Year.						No. of Births. including Still-births.	Deaths from all causes of Puerperal State,* exclusive of accidents of Pregnancy.		Deaths from Puerperal Septicæmia.	
							Number.	Rate per 1,000 Births.	Number.	Rate per 1,000 Births.
1919	...	...	...	...	...	7,155	28	3.9	9	1.2
1920	...	...	...	...	...	8,397	41	4.9	15	1.7
1921	...	...	...	...	...	8,032	20	2.5	6	0.7
1922	...	...	...	...	...	8,379	30	3.6	8	0.9
1923	...	...	...	...	...	8,076	22	2.7	8	1.0
1924	...	...	...	...	...	8,752	27	3.1	8	0.9
1925	...	...	...	...	...	8,449	32	3.8	8	0.9
1926	...	...	...	...	...	8,529	40	4.7	14	1.6
1927	...	...	...	...	...	8,696	42	4.8	18	2.1
1928	...	...	...	...	...	8,981	50	5.6	20	2.3

* Includes the following headings, as laid down in the Registrar-General's list of causes of death—

1. Puerperal hæmorrhage.

2. Other accidents of labour.

3. Puerperal septicaemia.

4. Puerperal albuminuria, convulsions.
5. Puerperal phlegmasia, alba dolens.

6. Following childbirth.

7. Puerperal diseases of the breast.

It is disquieting to note an increase both in cases and mortality not only for puerperal sepsis but from all causes of the puerperal state, and this in spite of the general recognition of the importance of pre-natal care and the more general adoption of pre-natal examination as a means of obviating the dangers of the puerperal state.

VENEREAL DISEASE.

The total number of new cases of venereal disease for the two years under review was, for 1927, 934, and for 1928, 993. Both these figures are very much in excess of that for 1926, namely 788.

The increase in both cases was accounted for mainly by gonorrhoeal infections, of which there were 839 in 1927 and 888 in 1928, as against only 707 in 1926.

Syphilis, also, has shown an increase in 1928, there having been only 62 in 1926 and 66 in 1927 as against 82 in 1928.

In view of the fact that there has been for some years a progressive fall in the incidence of all forms of syphilis this rise is difficult to explain, unless it be realised that the figures have been so low that it required only a few active foci of infection to bring about a high percentage increase. For instance, primary cases were 15 in 1926, 17 in 1927, and 32 in 1928, the increase being chiefly in males. The secondary cases were respectively 7, 12 and 14, and tertiaries 33, 35 and 31.

Whereas tertiaries have shown practically no change, primaries and secondaries have shown a progressive increase since 1926 which though, relatively, 100 per cent. increase in 1928 as against 1926, is an actual increase which might have resulted from the presence in the community of one or two infective cases under conditions favouring the infection of a number of persons.

Gonorrhoea, however, does show a disturbing increase:—

			1926.	1927.	1928.
Males	...	...	638	727	778
Females	...	...	69	112	110

And comparing the two years under review with the year 1926 we find a 13.9 per cent. increase in males and a 62 per cent. increase in females for 1927; and 21 per cent. increase in males and approximately a 62 per cent. in females again in 1928.

It will be seen, therefore, that there is an actual increase in both males and females which is relatively much higher in females during the years under review. It may be that more females are seeking treatment than formerly. It will be noted that in 1927 there were approximately 6.5 male cases to each female case, and in 1928 7 to 1. In 1926 the proportion was 9.2 to 1, and 1925 about 10 to 1.

Administrative.

The administrative activities in regard to venereal disease legislation for the two years under review are set out in the following table:—

	1927.	1928.
Number of notifications of failure to continue treatment	283	331
Number of persons involved	271	283
Defaulters traced	204	217
Defaulters not traced	44	66
Defaulters in regard to whom action not finalised at end of year	37	40
Number of defaulters who resumed treatment	167	152

	1927.	1928.
Orders issued requiring attendance ...	204	260
	(involving 610 letters)	(involving 564 letters)
Prosecutions for disobeying orders ...	3	9
Persons ordered to be examined to whom infection attributed	15	11
Certificates of cure issued by Clinics...	213	190
Prosecutions for illegally treating Venereal Diseases	1	1

The tables below summarise the notifications received during the years under review:—

TABLE I.—VENEREAL DISEASE.
Summary of Notifications for twelve months ended 31st December, 1927.

Disease.	Males.	Females.	Total New Cases (both sexes).	Total Notifications received.
Syphilis—Primary	16	1	17	20
Secondary	9	3	12	18
Tertiary	25	10	35	54
Congenital	1	1	2	5
Total	51	15	66	97
Gonorrhœa	727	112	839	1,037
Chancroid (Soft Chancre)	13	1	14	16
Granuloma	4	10	14	16
Gonorrhœa—Ophthalmia	1	...	1	1
GRAND TOTAL	796	138	934	1,167

TABLE 2.—SUMMARY OF VENEREAL DISEASE NOTIFICATIONS RECEIVED FROM METROPOLITAN AND OTHER DISTRICTS.
1927.

Month.	District.	Syphilis.				Gonor-rhœa.	Chan-croid.	Granu-loma.	Gonor-rhœa Ophthal-mia.	Totals.		
		Prim-ary.	Secon-dary.	Ter-tiary.	Con-genital.					Metro-politan.	Other.	Total.
January...	Metropolitan	1	3	2	...	50	...	...	1	57	...	72
	Other ...	...	...	...	...	14	1	...	...	...	15	
February	Metropolitan	2	1	6	...	31	2	...	...	42	...	53
	Other ...	...	1	...	...	7	3	...	...	...	11	
March ...	Metropolitan	4	2	4	...	109	...	...	...	119	...	131
	Other ...	...	...	...	...	12	...	...	...	...	12	
April ...	Metropolitan	...	1	3	...	104	...	...	...	108	...	133
	Other ...	3	...	...	...	17	1	4	...	...	25	
May ...	Metropolitan	1	...	4	...	63	...	...	...	68	...	74
	Other ...	...	...	...	...	5	...	1	...	...	6	
June ...	Metropolitan	1	...	...	...	56	...	...	...	57	...	64
	Other ...	...	...	...	...	4	...	3	...	...	7	
July ...	Metropolitan	...	...	3	...	41	1	...	...	45	...	57
	Other ...	...	...	...	...	10	...	2	...	...	12	
August ...	Metropolitan	...	...	2	...	47	...	...	...	49	...	56
	Other ...	...	...	...	1	6	...	...	...	...	7	
September	Metropolitan	...	1	...	...	52	...	...	...	53	...	62
	Other ...	1	...	2	1	4	1	...	...	...	9	
October ...	Metropolitan	1	2	1	...	50	1	...	...	55	...	70
	Other ...	1	...	...	...	14	...	...	...	...	15	
November	Metropolitan	1	...	3	...	70	1	...	...	75	...	87
	Other ...	...	...	2	...	9	...	1	...	...	12	
December	Metropolitan	...	1	1	...	60	1	...	...	63	...	75
	Other ...	1	...	2	...	4	2	3	...	...	12	
		17	12	35	2	839	14	14	1	791	143	934

TABLE 1.—VENEREAL DISEASE.

Summary of Notifications for twelve months ended 31st December, 1928.

Disease.	Males.	Females.	Total New Cases (both sexes).	Total Notifications received.
Syphilis—Primary	29	3	32	43
Secondary	8	6	14	22
Tertiary	19	12	31	58
Congenital	4	1	5	5
Total	60	22	82	128
Gonorrhœa	778	110	888	1,118
Chancroid (Soft Chancre)	12	...	12	16
Granuloma	5	1	6	7
Gonorrhœa—Ophthalmia	4	1	5	5
GRAND TOTAL	859	134	993	1,274

TABLE 2.—SUMMARY OF VENEREAL DISEASE NOTIFICATIONS RECEIVED FROM METROPOLITAN AND OTHER DISTRICTS.

1928.

Month.	District.	Syphilis.				Gonor- rhœa.	Chan- croid.	Granu- loma.	Gonor- rhœa Ophthal- mia.	Totals.		Total.
		Prim- ary.	Secon- dary.	Ter- tiary.	Con- genital.					Metro- politan.	Other.	
January...	Metropolitan	4	1	2	...	76	3	...	...	86	...	97
	Other ...	...	...	...	1	9	1	...	...	...	11	
February	Metropolitan	1	...	2	...	67	...	...	...	70	...	85
	Other ...	1	...	1	...	11	...	2	...	...	15	
March ...	Metropolitan	2	...	...	...	72	1	...	...	75	...	77
	Other ...	1	...	...	...	1	...	...	...	...	2	
April ...	Metropolitan	...	...	...	...	48	...	...	...	48	...	56
	Other ...	...	...	2	1	5	...	...	...	...	8	
May ...	Metropolitan	3	2	2	...	78	1	...	...	86	...	104
	Other ...	...	...	2	1	15	...	...	...	...	18	
June ...	Metropolitan	2	...	1	...	59	...	...	1	63	...	78
	Other ...	...	1	...	...	14	...	...	...	...	15	
July ...	Metropolitan	6	1	1	...	57	...	...	3	68	...	84
	Other ...	...	...	...	...	15	1	...	...	...	16	
August ...	Metropolitan	1	2	1	1	69	2	...	...	76	...	80
	Other ...	1	...	...	...	2	1	...	...	...	4	
September	Metropolitan	...	2	3	...	42	1	...	...	48	...	73
	Other ...	3	2	2	1	15	...	1	1	...	25	
October ...	Metropolitan	3	...	3	...	81	...	...	...	87	...	101
	Other ...	...	...	1	...	11	...	2	...	...	14	
November	Metropolitan	1	1	2	...	78	1	...	...	83	...	103
	Other ...	1	...	5	...	13	...	1	...	...	20	
December	Metropolitan	2	...	1	...	43	...	...	...	46	...	55
	Other ...	...	2	...	...	7	...	...	...	...	9	
		32	11	31	5	888	12	6	5	836	157	993

TABLE 3.—VENEREAL DISEASE.
1927.

Months.	Hospital Clinics.				Private Doctors.		Prisons and Asylums.	Total.
	Children's.	Perth.	Fremantle.	Kalgoorlie.	Metro-politan.	Other.		
January ... ..	...	19	20	3	17	12	1	72
February	2	2	16	...	22	11	...	53
March ... ..	...	40	7	...	70	12	2	131
April ... ..	...	34	14	1	59	23	2	133
May	1	22	6	...	38	6	1	74
June ... ..	...	29	4	...	24	7	...	64
July	1	16	11	2	16	10	1	57
August ... ..	...	23	4	...	21	7	1	56
September ... ..	...	8	7	...	35	9	3	62
October ... ..	...	17	6	...	28	16	3	70
November ... ..	...	23	8	...	42	12	2	87
December ... ..	...	16	10	...	37	12	...	75
Total	4	249	113	6	409	137	16	934

TABLE 4.—VENEREAL DISEASE.
1928.

Months.	Hospital Clinics.				Private Doctors.		Prisons and Asylums.	Total.
	Children's.	Perth.	Fremantle.	Kalgoorlie.	Metro-politan.	Other.		
January	2	27	13	1	42	10	2	97
February ... ..	...	24	2	2	41	13	3	85
March	1	21	6	...	46	2	1	77
April ... ..	...	15	...	...	30	8	3	56
May	1	35	5	...	43	18	2	104
June	1	30	6	3	26	12	...	78
July	2	17	5	...	43	16	1	84
August ... ..	...	30	6	...	39	4	1	80
September ... ..	...	11	1	...	35	25	1	73
October ... ..	...	28	10	2	49	12	...	101
November ... ..	...	17	8	...	56	20	2	103
December	1	...	10	...	34	9	1	55
Total	8	255	72	8	484	149	17	993

Cancer.

Cancer has for some years undoubtedly shown an increased incidence in Western Australia in common with the other States of Australia, and appears to be still increasing. Research work into the causes of cancer has, in the absence of a medical school in this State, had little attention as the competent Government officials able to undertake such work have been fully occupied with routine duties which have left little time for research. Until a few years ago, treatment of cancer was largely confined to surgical procedures, but during the last few years, two deep therapy X-ray plants owned by private medical practitioners have done a considerable amount of work in cancer treatment. No such plant has been available at public hospitals, but some years ago the Government entered into an agreement with these two medical practitioners whereby approved cases, likely to benefit by this form of treatment, and who were unable to pay private fees, received this treatment at Government expense. In all, 80 cases have received Government assistance with varying degrees of benefit,

In 1927, the public of Western Australia subscribed £3,300 for the purchase of radium, and a considerable number of cases have received radium treatment. Recently, when the Federal Government acquired a quantity of radium for distribution amongst the States, Western Australia accepted the Commonwealth offer to subsidise to the extent of £5,000 similar contributions by the State Government and the public for the purpose of establishing a cancer clinic for the investigation and treatment of this disease. For this purpose a sum of £18,000 is now available and plans and specifications of the necessary buildings, to be erected in the grounds of the Perth Hospital, are in course of preparation. So soon as these are completed, tenders will be called and the work commenced.

In the meantime, a specialist radium-therapist has been appointed and brought from England, and is already in charge of radium work at the Perth Hospital.

The new centre will also be equipped with a deep-therapy X-ray plant.

A special committee will be established to control the work of this centre, upon which specialists in the various branches of medical and surgical work will be represented.

The centre will also contain two special wards for the treatment of in-patients and a pathological laboratory for the microscopic examination of cancer specimens. It is also proposed to conduct clinics for the instruction of medical practitioners in the use of radium.

The buildings, furnishings, and equipment are estimated to cost in the region of £17,000, and will be very complete and up-to-date.

It is also proposed to maintain and preserve complete records and reports of treatment upon the lines suggested by the Commonwealth Department of Health, and these records will be of great assistance to research workers throughout Australia.

INFANT HEALTH.

During the past two years the activities of the Infant Health Association have been extended considerably. There are now 15 centres in operation as compared with 10 at the end of 1926, while branches of the association have been formed at three additional country towns.

There can be no doubt that the services rendered by the specially trained sisters engaged in the work is appreciated by mothers, judging by the summary of reports issued for the year ended 30th June, 1928, as follows:—

Total number of individual babies dealt with	5,087
Total attendances of babies at centres ..	32,469
Total visits to households	10,208
Total consultations, including correspondence	43,793
Number referred to doctor or hospital:—	
Mothers	139
Babies	492

This work was first undertaken by the Association in 1923 and it is interesting to note that, whereas in that year the number of deaths of infants under two years of age from diarrhoea and enteritis was 143, the figures for subsequent years were:—

1924.	1925.	1926.	1927.	1928.
117	138	96	93	124

It will be noted that the figure for 1928 is considerably higher than that for the two preceding years, but is, nevertheless, lower than the figure for 1923.

Expenditure of Government funds by way of subsidies for these health centres continues to grow, and from a public health viewpoint money could scarcely be more wisely spent.

The special training necessary for the sisters can now be obtained at the King Edward Memorial Hospital, Subiaco, so that there should soon be no need to go to other States for this purpose.

DEPARTMENTAL VISITING SISTERS.

These officers have continued the work of supervising practising midwifery nurses, inspecting maternity homes, and visiting persons notified as suffering from pulmonary tuberculosis.

During 1927, 2,086 visits were paid to tuberculous persons, while for 1928 the number was 2,105. On

these visits the sisters are able to give very valuable advice on proper methods of living with a view to the ultimate cure of the patients and instruction as to means to be adopted for the prevention of the spread of infection.

During 1927, 468 inspections of maternity homes were made, the figure for the following year being 467.

In connection with the supervision of midwifery nurses, 893 inspections, and in addition 346 inquiries into special cases, were made, while the figures for 1928 were 1,050 and 207 respectively.

MIDWIVES' REGISTRATION BOARD.

This body, which controls the registration and practice of midwifery nurses in this State, continued to function during the period under review.

During 1927, 43 candidates presented themselves for the Board's final examination and all were successful. For 1928 the number of candidates to secure a pass was 39.

In 1927, 56 names were removed from the roll on account of failure to effect re-registration as required by the regulations, while in 1928, 72 were similarly dealt with.

NURSES' REGISTRATION BOARD.

This Board is the controlling authority in this State for the training and registration of general nurses.

At the final examinations held during the two years under review the number of candidates who presented themselves was: for 1927, 75, of which number 9 failed to satisfy the examiners; for 1928, 82, of whom 9 failed.

LABORATORY.

Details of the work carried out in the pathological laboratory and the report of the Pathologist will be found in Appendix B.

SCHOOL MEDICAL INSPECTION.

In Appendix C will be found reports upon the school medical inspection work for the period under review, and details of the examinations made.

During 1928 an exchange was made between one of the school medical officers (Dr. Stang) and Dr. Holloway, an officer of the London County Council. This exchange was for a period of one year, and it is expected that each will benefit from the experience.

During the period arrangements have been made whereby the services of one school medical officer are available to the Teachers' Training College at Claremont on two days per week. The duties of this officer are to medically examine entrants to the College, to instruct them in hygiene, and to act as medical adviser generally to the administration of the Training College.

There can be no question of the importance of making hygiene an important part of the training of teachers who have so much opportunity of imparting their knowledge and of putting it to practical use in the course of their daily work. The importance, moreover, of a strict medical examination of those about to enter the teaching profession cannot be over-stressed.

To meet the extra strain put upon the staff by this arrangement and in order that their main function of examining children in the schools shall not suffer, the services of a half-time officer were dispensed with and an additional full-time officer has been appointed.

SCHOOL DENTAL WORK.

The Department has now three full-time school dentists on the staff, a considerable portion of whose time is occupied in country districts where dental facilities are not available.

The Dental Hospital in Perth continues to do a very great amount of work for children referred from the schools.

Reports showing the activities of the school dentists, and details of their work, will be found in Appendix D.

INSPECTION OF FOODSTUFFS ARRIVING FROM OVERSEAS.

The services of one officer of the Inspectorial staff are still retained for whole-time duty on Fremantle Wharf with the object of examining imported foodstuffs.

The following table of foods seized and destroyed as unfit for consumption shows the justification for this constant supervision.

The wholesale condemnations made in the past are gradually resulting in better packing of canned goods and more care in the transport, curing, and refrigeration of uncanned articles of food.

Foodstuff seizures on Fremantle Wharf.

	1927.	1928.
Cod Fillets	18,718 lbs.	44,546 lbs.
Silds	17,550 tins	7,319 tins
Fresh Soles	340 lbs.	300 lbs.
Haddock	2,310 lbs.	574 lbs.
Kippers	70 lbs.	154 lbs.
Schnapper	11,956 lbs.	...
Ling	300 lbs.	...
Barracoota ... ..	...	60 lbs.
Salmon ... ..	...	151 lbs.
Cod Roes ... ..	...	1,400 "
Herrings in oil	6 barrels	...
Beef	1,163 lbs.	1,900 "
Pork	366 "	201 "
Mutton ... ..	...	1,041 "
Hams ... ..	...	546 "
Bacon ... ..	...	90 "
Ox Tongues	20 "	340 "
Ox Kidneys	64 "	...
Ox Tripe	155 "	...
Potted Meat	400 "	...
Cheese	33 cases	...
Condensed Milk	480 tins	...
Cream ... ..	...	653 btles
Potatoes	260 lbs.	1,100 lbs.
Beans	250 "	...
Macaroni	660 "	...
Prunes	336 "	...
Chestnuts	107 "	...
Figs (dried)	60 "	...
Dates	60 "	...
Tomato Pulp	50 galls.	...
Pineapple ... ..	...	24 tins
Maize Meal ... ..	...	550 lbs.
Rice Meal	26,000 lbs.	...
Cream of Tartar ... ..	...	784 "
Tartaric Acid ... ..	...	336 "
Various—In tins ... ..	...	1,305 tins
In bottles ... ..	...	20 btles

ANALYSES OF FOODS AND DRUGS.

During 1927, 109 samples of food and 10 samples of drugs were submitted to the Government Analyst for examination. During 1928 the numbers were 189 and 17 respectively.

These samples were taken with a view to determining compliance or otherwise with the Food and Drug Regulations.

MEAT INSPECTION.

In Appendix G are shown the numbers of the various food animals examined, and the carcasses, part carcasses and organs condemned by the Departmental Meat Inspectors during the two years under review. A review of the diseased conditions found shows the necessity for highly trained men in this branch of Public Health work, whilst the number of animals dealt with demonstrates the magnitude of the work.

During 1928 the Veterinary Inspectors of the Agricultural Department ordered the slaughtering of 119 animals from dairies and elsewhere, and this was carried out at the abattoirs under the supervision of the Departmental Inspectors. Of those slaughtered 75 carcasses were totally condemned, 36 partially so, and 8 were passed.

Tuberculosis was found to be present in 85 cases. Of 59 animals which had reacted to the tuberculin test, 57 were found, on post-mortem examination, to be tuberculous, whilst two showed no visible evidence of tuberculosis.

SMALL SEPTIC TANK INSTALLATIONS.

Local Health Authorities in the Metropolitan area are being confronted with the ever-increasing difficulty of disposing of the night-soil collected by means of the double-pan system. Increased population has necessitated extension of building areas, so that depots which have served the purpose for many years are now being strenuously objected to, whilst new sites suitable for the purpose are not obtainable within a reasonable distance.

In order to meet the difficulty it has been considered a feasible proposition to instal small septic tanks in certain districts where the nature of the ground is suitable and the probable extension of the sewerage system remote.

In April, 1927, therefore, regulations were published under the provisions of an amendment to the Health Act, which brought the control of septic tanks under the Health Department, and required plans and specifications of these to be submitted and approved before the work of installation commenced.

By December, 1928, 1,369 small septic tank installations had been approved and constructed. The principal districts concerned were: Claremont Road Board, 316 installations; Cottesloe, 303; and Peppermint Grove, 188. In the latter district every house has now been provided with a tank and the sanitary depot closed.

After two years' experience of the small septic tank it can be said that the system has more than fulfilled expectations, and throughout that period not one complaint has been received regarding any tank after the first few weeks of working, whilst the comfort and convenience resulting appears to be greatly appreciated by everyone concerned.

LEGAL PROCEEDINGS UNDER THE HEALTH ACT.

Prosecutions for offences under the Health Act, with results and fines, are scheduled hereunder. These cases are usually conducted by officers of the inspectorial staff:—

Legal Proceedings under “ The Health Act, 1911-19 ” for Year ending 31st December, 1927.

Nature of Offence.	Section of Act.	No. of cases.	Convictions.	Cases with-drawn.	Cases dis-mitted.	Cases ad-journed sine die.	Fines.	Costs.
							£ s. d.	£ s. d.
Failure to provide sanitary conveniences	83	2	2	...	...	...	23 0 0	7 8 4
Nuisances	147	8	7	...	...	1	15 0 0	9 3 11
Failure to register offensive trade premises	156	3	2	...	...	1	22 0 0	4 6 8
For permitting swine to be in slaughter-house	161	1	1	...	...	...	5 0 0	0 17 3
For permitting swine to feed on un-cooked offal	162	7	5	1	...	1	11 0 0	9 16 4
Offering for sale unwholesome milk ...	171	2	...	1	1	...	...	...
Offering for sale unwholesome meat ...	166	1	1	...	...	...	2 0 0	1 9 4
Offering for sale milk under standard ...	183	11	9	2	...	...	45 0 0	8 7 7
Treatment for venereal disease by un-qualified persons	246	1	1	...	...	...	25 0 0	0 2 0
Failure on part of venereal patients to continue treatment	248	8	4	4	...	...	8 0 0	0 13 6
Dairy By-laws ... ..	...	10	5	5	...	...	21 12 0	1 7 0
Midwifery Regulations	E 7	1	1	...	...	...	4 0 0	0 5 0
Failure to cleanse verminous children	292	25	25	...	...	...	56 10 0	3 16 0
...	...	80	63	13	1	3	257 12 0	47 12 11

Legal Proceedings under “ The Health Act, 1911-19 ” for Year ending 31st December, 1928.

Failure to submit plans of bacteriolytic treatment tanks	88	8	6	2	...	...	40 0 0	2 4 0
Nuisances	147	4	4	...	...	...	31 0 0	6 11 7
Failure to register offensive trades ...	156	2	2	...	...	...	22 0 0	6 18 8
Feeding swine on uncooked offal ...	162	1	1	...	...	...	20 0 0	1 11 6
Treatment of venereal disease by un-qualified persons	246	1	1	...	...	...	7 0 0	0 4 0
Failure on part on venereal patients to continue treatment	248	6	...	6	...	...	...	...
Failure by midwives to notify cases attended	291	2	2	...	...	...	1 10 0	0 11 0
Failure to cleanse verminous school children	292	15	14	1	...	...	28 0 0	2 2 0
Dairy By-laws ... ..	...	1	...	1	...	...	...	...
...	...	40	30	10	...	...	119 10 0	20 2 9

In conclusion I should like to record my appreciation of the great assistance given me by all members of the staff, whose active and loyal co-operation have rendered the operations of the Department both pleasurable and successful.

EVERITT ATKINSON, M.A., M.D., D.P.H.,
Commissioner of Public Health.

APPENDIX A.

THE MILK SUPPLY.

Report to the Hon. Minister for Health after visit to U.S.A.

I understand that during my absence from the State there has been considerable controversy upon the subject of milk and the milk supply of Perth, and that one of the main points under dispute has been the question of pasteurised milk.

I think there is quite sufficient scientific evidence nowadays upon which we may dismiss the claim that pasteurised milk is "spoiled milk," either from the point of view of vitamin content or destruction or loss of food value; this latter, if it occurs, is so infinitesimal as to be negligible.

Throughout my travels I have discussed the question with physiologists, nutritionists, and scientists of various kinds, and without exception they have claimed that their experiments have shown no loss in food value of pasteurised milk. Some have claimed even better results with it. To others, in communities where a number of grades of milk are in use, such as pasteurised, Grade A raw, etc., and certified milk (which generally costs too much to produce) the question has been put: "Do you like these numerous grades of milk to deal with? Would you not like to have one grade only, and if so, which?" The reply has almost always coincided with my own opinion: "Yes, pasteurised!" But pasteurised in a proper manner and under proper control, and given that the milk is reasonably clean before pasteurisation, is bottled, kept cool and only delivered in the original containers within 24 hours of bottling. Under these circumstances the question as to whether pasteurised milk will keep as long as unpasteurised milk need not be considered. It will certainly keep long enough, and as a rule keep longer.

Although it may not be entirely accepted, I think the majority of opinion favours the belief that pathogenic bacteria, with the exception of spore-bearers, which do not enter largely into the question, are killed or rendered inert by exposure to a temperature of from 140 deg. to 145 deg. F. for thirty minutes, and this temperature and this time are essential for efficient pasteurisation. This time and temperature must therefore be capable of control and accurate estimation, and this is quite impossible without the proper recording devices now in use in all complete and efficient plants. These recording thermometers which graphically record the temperature and the time during which that temperature is maintained are essential for control, and without them no efficient pasteurisation is possible. It is usual, therefore, to give no recognition to plants not so provided, nor to any process but the holding process.

Under the conditions stated, then, it should be possible to produce an article of unimpaired food value and free from those disease-producing bacteria which may so readily gain access to milk and which, when they do, flourish so exceptionally well in that most suitable medium. Milk, by the very nature of it, and the method of its production, is peculiarly liable to become infected. It is an excretion from an animal,

and therefore liable to contain the germs of certain animal diseases transmissible to man. It runs the gauntlet of the germs upon the cow, dust of the milking shed, the hands of the milker, the saliva from his mouth, the spray of his cough, the contact with his skin, the water used in the cleansing of the dairy utensils, the filth of the cow-yard, the attentions of the fly, etc., etc., and so are the possibilities of specific infections legion. Proper pasteurisation will remove these dangers and immediate bottling will prevent their re-entrance after pasteurisation.

It is true that danger may exist at the pasteurisation plant, but in a good and properly controlled plant this danger is infinitesimal. But thorough control of the plant by competent persons is nevertheless essential in order that the advantage gained by pasteurisation shall not be lost. If properly bottled and kept cool the dangers of distribution which are little less than those of production, under the old method of "dipping," are almost entirely eliminated. Under the conditions above how is it possible to say that pasteurisation is not the most desirable and an enormous advance upon the old methods?

During my twelve weeks in America I have seen a vast nation with its face set firmly towards pasteurisation as the solution of a great problem. I have seen enormous communities well upon the way to pasteurisation of the whole of their supply and almost that whole supply contained in clean protected bottles with no re-infection possible. During the whole period I drank freely and daily of the milk, and never once, although the weather was very hot throughout, did I taste a suspicion of souring, and nowhere did I hear one word against pasteurisation either from public or scientist. I saw quite a number of pasteurisation plants of excellent type and was assured that inspection and control were very complete.

In London there can be little doubt that the trend is in the same direction, and I was informed that the United Dairies, one of whose excellent pasteurisation plants I saw, now handle in five large plants almost 60 per cent. of the milk of London.

American Methods.

Although I had no special commission to investigate the milk supply of America, I took every opportunity of informing myself regarding it, though, as you know, this was only one item of the very numerous public health activities I felt impelled to inquire into.

Hereunder I detail the information I was able to collect in the limited time at my disposal, but at first hand, regarding the milk supply in a number of the cities visited. As regards the question as to whether the tubercle bacillus is killed by pasteurisation, I can only say that there is a general belief in America by those with whom I discussed the question that it is,

and definite statements that there has been a marked reduction in bovine tuberculosis of children in communities where pasteurisation of milk was carried out. Frequently it was stated also that epidemics of communicable disease traceable to milk were now conspicuous by their absence, though these were of frequent occurrence previously.

Before going into details of the information obtained in the various cities visited, it might be well to define "certified" milk as generally understood there, and as an example I quote the main provisions of the Ontario Milk Act in that regard:—1. Certified milk shall be from cows semi-annually subjected to the tuberculin test and found to be without reaction. (2) It shall contain not more than 10,000 bacteria per c.c. from June to September, both inclusive, and not more than 5,000 bacteria per c.c. from October to May both inclusive. (3) It shall be cooled to 45 deg. F. or under within half an hour of milking and be kept at that temperature until delivered to the consumer. (4) It shall be from a farm the herd of which is inspected monthly by the veterinarian. (5) It shall be from a dairy the employees of which are examined monthly by a physician.

Under these circumstances, it will be understood, firstly, that few dairy men could afford to comply with the conditions, and, secondly, that such milk is more expensive than other grades, and, therefore, produced only in comparatively small quantities. It is better, therefore, to endeavour to provide a milk for the bulk of the population rendered safe by pasteurisation, which does not throw so much burden upon the producer and which in price is more within the reach of all. On the other hand, "certified" milk, however carefully produced, still runs the risk of infection by the handler and can never be so safe as a properly pasteurised milk.

Food Value.

So great is now the recognised food value of milk to the community that we should do all in our power to place it within the reach of everyone as cheaply but as safe as possible. Certified milk is too expensive, pasteurised milk is cheaper and safer, for tuberculosis is frequently found in certified herds.

Pasteurised milk as generally accepted is milk that has been raised to a temperature of 145 deg. F. and maintained at that temperature for thirty minutes and then immediately cooled to 45 deg. F., at which temperature it should be kept until delivered to the consumer. The process of pasteurisation should be constantly subject to inspection by the health authorities. Pasteurisation should not, however, be regarded as a substitute for cleanliness, and therefore only milk which comes up to a certain standard of cleanliness is fit for pasteurisation, and such standard should be maintained. I am strongly of opinion, therefore, that pasteurised milk is the milk of the future, though even this may eventually be superseded by dried milk. But I think that any attempt to produce a good pasteurised milk in this State, under efficient control, bottled and in a properly equipped plant, should be fostered as the beginning of the solution of the milk problem here.

Recommendations.

As a result of my visit to the United States and London, I have developed a fairly clear-cut idea as to

what I consider the ideal conditions of milk supply for which we should strive. Though these may appear to some Utopian, I do not consider them beyond the realm of possibility, though their complete fulfilment may have to be gradually attained. The question of organisation and the means of attainment I do not propose to go into at this stage, but I merely set out hereunder certain facts which appear to me to point to the goal which we should strive to reach.

They are as follow:—(1) The consumption of milk should be increased in the case of both adult and child. (2) Milk should therefore be as cheap and as pure as possible consistent with an adequate return to the producer. (3) However it is to be treated it should be clean at the source of production and throughout its journey to the consumer maintained in that condition. (4) It should be free from disease-producing bacteria derived either from the cow or human handlers. (5) There are only two ways of attaining this: (a) By obtaining the milk from a tuberculosis-free herd, a herd regularly inspected by a veterinary surgeon, and excluding animals found to be diseased from the herd; by having all employees medically examined at intervals of not less than one month and by excluding those found to present diseased or unhealthy conditions. (b) By pasteurisation. It is obvious that the first involves expenditure and conditions sufficiently stringent almost to exclude it, whilst it cannot be so sure as the second method. (6) Pasteurisation promises, therefore, the safest milk. (7) Pasteurisation does not affect the food value of milk. (8) All milk should be bottled in a proper manner at the point of production and be delivered to the consumer in the original sealed container. (9) The dipping method of the delivery of milk is absolutely unsafe. (10) All milk should be cooled to 50 deg. F. or under, so soon as it is drawn, and maintained at that temperature until delivered. (11) Proper facilities must be available at the point of production and during transit for the maintenance of this temperature. (12) Special education of all persons engaged in the production and handling of milk is essential for the production and delivery of a clean safe product. (13) No unpasteurised milk should be sold as a special milk for infants or children, unless it complies with the requirements for certified milk to be hereafter defined. (14) It is my firm conviction that, in the interests of the public health, there should only be one grade of milk, namely, "pasteurised milk." To meet the objections of some, however, and because under present conditions in this State, the ideal could not, for financial and other reasons, be peremptorily introduced, three grades might be recognised as a tentative measure, namely (a) pasteurised milk (bottled), (b) certified milk (bottled). (c) "Standard milk." (15) The following bacteriological standards are necessary:—(1) A standard beyond which it shall not be lawful to sell milk, namely, 500,000 c.c. (2) A standard for pasteurised milk, namely, 50,000 per c.c. (3) A standard for certified milk, namely, 10,000 bacteria per c.c. I believe it is possible to considerably reduce these standards of purity as education proceeds and facilities for cooling and transport improve. They should, therefore, be subject to revision.

The above standards should be defined as follows:—

Pasteurised Milk.—Pasteurised milk is milk which has been rapidly raised to a temperature of 145 deg. F. and maintained at that temperature for thirty minutes and then has been rapidly cooled to a temperature below 50 deg. F., at which temperature it is held until delivered to the consumer. Certified Milk.—Certified milk is milk that has been produced at a dairy approved by the controlling authority, and by methods and under conditions required by that authority. (a) It shall be from cows semi-annually subject to the tuberculin test and found to be without reaction. (b) It shall be from a farm the herd of which is inspected monthly by a veterinarian.

(c) It shall be from a dairy the employees of which are examined monthly by a physician. (d) It shall contain not more than 10,000 bacteria per cubic centimetre. (e) It shall be cooled to 45 deg. F. or under within half an hour of milking, and kept at that temperature until delivered to the consumer. (f) It shall be bottled and delivered to the consumer in the original sealed container.

“Standard milk” shall be milk that has been produced at a dairy approved by the controlling authority and by methods and under conditions required by that authority. It shall contain not more than 500,000 bacteria per c.c.

APPENDIX B.

Commissioner of Public Health.

Sir,

Hereunder I submit the Laboratory work done during the years 1927 and 1928.

In connection with diphtheria, in normal years the number of swabs sent to the Laboratory for examination remains fairly constant. During the year 1928 there was a considerable increase in diphtheria swabs submitted and it was thought that this might indicate the commencement of a large epidemic. The increase remained restricted to a few centres of population however. There was about double the number of swabs examined as in a normal year.

Examinations for tubercle bacilli reached over 1,000 each year: of these in 1928, 56 were by guinea-pig inoculation. These were practically all of urines. The positives worked out at 1 in 16.

Typhoid fever is not now a frequent disease, the diagnosis of only just over 20 cases having been confirmed during the year by bacteriological methods. On the other hand, there have been more cases of Brill's disease than formerly, 49 positive Weil-Felix reactions having been obtained during the year 1928 as against only 17 in 1927.

The number of Wassermann tests continued steadily to increase, the great majority of these being for diagnostic purposes in obscure cases, or in order to check treatment. The Kahn test is frequently used as a useful second test, being particularly helpful in the diagnosis of cases where the serum has become anticomplementary. Comparisons are also made with results obtained by the Wassermann method to test the percentage of agreement. On the whole the results are found to agree very closely, but a larger number requires to be done yet. We find after six months' use of a stock Antigen that it is advisable to make a new one.

Over 200 complement fixation tests for gonococcal infection has been done during the year. It has been found that joint affections and tubal disease cases give very strong positive reactions. The test is very frequently asked for before final discharge of cases from public venereal clinics.

W. S. MCGILLIVRAY.
Bacteriologist.

1927.
TUMOURS AND TISSUES.

<i>Human.</i>					
MALIGNANT.					
Adamantinoma	...	...	...	...	1
Squamous Carcinoma (Epithelioma)	...	...	...	...	16
Adeno-Carcinoma	...	...	...	...	11
Scirrhus Carcinoma	...	...	...	...	3
Carcinoma Simplex	...	...	...	...	15
Rodent Ulcer	...	...	...	...	4
Sarcoma, Spindle celled	...	...	...	...	2
Sarcoma, Round celled	...	...	...	...	6
Sarcoma, Mixed celled	...	...	...	...	3
Endothelioma	...	...	...	...	1
Melanotic Sarcoma	...	...	...	...	2
Chorion Epithelioma	...	...	...	...	1
Glioma	...	...	...	...	1
NON-MALIGNANT.					
Simple inflammatory	...	...	...	...	16
Fibroma	...	...	...	...	9
Fibro-Adenoma	...	...	...	...	12
Cyst-Adenoma	...	...	...	...	3
Adenoma	...	...	...	...	5
Fibrosis	...	...	...	...	13
Normal Tissues	...	...	...	...	23
Polypus	...	...	...	...	4
Cirrhosis	...	...	...	...	1
Lipoma	...	...	...	...	1
Cystic	...	...	...	...	15
Warts	...	...	...	...	7
Papilloma	...	...	...	...	7
Angioma	...	...	...	...	4
Granulation	...	...	...	...	3
Myxoma	...	...	...	...	4
Leprosy	...	...	...	...	1
Mole	...	...	...	...	1
Lymphoid Tissue	...	...	...	...	3
Products of Conception	...	...	...	...	3
Goitre	...	...	...	...	1
Necrosis	...	...	...	...	3
Broncho-Pneumonic	...	...	...	...	2
Hyperkeratosis	...	...	...	...	2
Anthracosis	...	...	...	...	1
<i>Animal Tissues.</i>					
Bullock's lung	Calcification				
Bullock's glands	Inflammatory				
Pig's glands	Tubercle				
Pig's glands	Abscess				
Sheep's kidney	Chronic Inflammation.				

1927.

	Posi- tive.	Nega- tive.	Incom- plete.	Total.
<i>Diphtheria</i> —				
Swabs (Throat and Nasal)	...	...	...	...
Guinea pig inoculation, for	120	1,557	...	1,677
Virulence of K.L.B.	...	...	...	4
<i>Tuberculosis</i> —				
Sputa	210	759	...	969
Urines	3	24	...	27
Cerebro Spinal Fluids	...	6	...	6
Fæces ... ..	...	2	...	2
Throat smear ... ..	...	1	...	1
Pus ... ..	...	6	...	6
Guinea pig inoculations	1	21	...	22
Milks ... ..	...	6	...	6
<i>Typhoid Fever, including Para- Typhoid Fevers</i> —				
Widal reactions	35	140	...	175
<i>Brill's Disease</i> —				
Weil-Felix Reactions ...	17	28	...	45
Fæces for Typhoid ... ..	...	32	...	32
Urines ... ..	...	30	...	30
Bloods 1 and Bile 1 ...	...	2	...	2
<i>Anchylostomasis</i> —				
Fæces ... ..	...	2	...	2
<i>Syphilis & Gonorrhoea</i> —				
Wassermann reactions ...	344	1,236	42	1,622
Kahn Tests	8	25	...	32
Complement Fixation for	44	57	...	101
Gonococci				
Smears for Gonococci ...	264	1,051	...	1,315
Urines for Gonococci ...	...	81	...	81
Spirochaetae Palliad ...	...	3	...	3
<i>Leprosy</i> —				
Smears	2	6	...	8
Tissues ... ..	...	...	...	...
<i>Malaria</i> —				
Blood smears ... ..	...	7	...	7
Fæces for amœbae	1	1	...	2
Fæces for Dysentery ...	...	17	...	17
Liver pus ? amœbae ...	...	1	...	1
Bilharziasis ... ..	...	1	...	1

GENERAL BACTERIOLOGY.

Urine for organisms	296
Pus for organisms	24
Catarrh of respiratory tract ? organisms	25
Cerebro Spinal fluids	19
Blood cultures	25
Vincent's Agina	10
Cervical swabs	3
Knee fluids	5
Pleural fluids	10
Urethral discharges	3
Ascitic fluid	2
Pyorrhœa	2
Antrum Wash	1
Dressing swab for sterility ...	1
Tomato pulp	1
Liquid gum	1
Fish	1
Bismuth & Iodoform Ointment ...	1

CHEMICAL AND GENERAL, 1927.

Total blood counts	15
Blood smears for leukaemia, etc. ...	32
Urines for microscopic examination	373
Urines for chemical examination ...	59
Bloods for sugar estimation	31
Urine for quantitative glucose ...	35
Urines for urea concentration test ...	64
Bloods for urea content	30
Bloods for isoagglutination	9

Ascitic fluid ... ..	...
Cerebro-spinal fluids for cells ...	...
Cerebro-spinal fluids for globulin ...	11
Fæces for blood ... ..	...
Stomach content ... ..	...
Pleural fluid	5
Medico-legal ... ..	...
Dungaree trousers for irritant ...	1
Worms for identification	1
Fæces for parasites	1
Abdominal fluid ? hydatid	1
Disinfectants for co-efficiency ...	3
Pus for cancer cells	1

VACCINES.

Aene	7
Bacilluria	30
Catarrh of the respiratory tract ...	75
Pyogenic infections	53
Pyorrhœa alveolaris	14
Antrum	1
Urethritis	2
Fæces	3
Cervical discharges	2
Waters	591
Milks	95
Butter	11
Cream	2

1928.

	Posi- tive.	Nega- tive.	Incom- plete.	Total.
<i>Diphtheria</i> —				
Throat and nasal swabs ...	279	3,134	...	3,413
<i>Tuberculosis</i> —				
Sputa	146	754	...	900
Urines	4	30	...	34
Guinea pig inoculations ...	8	48	...	56
Cerebro-spinal fluids ... ..	...	9	...	9
Fæces	1	...	...	1
Secretion, pig's gland ... ..	...	1	...	1
Milks ... ..	...	4	...	4
Pleural fluids ... ..	...	2	...	2
<i>Typhoid Fever, including Para- typhoid</i>	19	200	...	219
Urines for B. typhosius ...	1	36	...	37
Fæces for B. typhosus	4	47	...	41
Blood for B. typhosus ... ..	...	1	...	1
<i>Brill's Disease</i> —				
Bloods for Weil-Felix re- actions	49	97	...	146
<i>Syphilis and Gonorrhœa</i> —				
Wassermann reaction	421	1,576	75	2,072
Kahn Test	35	68	...	103
Complement fixation for gonorrhœa	58	155	9	222
Smears for gonococci	246	1,140	...	1,386
Urines for gonococci	1	60	...	61
Spirochaetae Pallida smears ...	...	4	...	4
<i>Leprosy</i> —				
Smears	2	1	...	3
Tissues	2	...	...	2
<i>Blood Smears</i> —				
Malaria	1	7	...	8
Filaria ... ..	...	1	...	1
<i>Dysentery</i> —				
Fæces for amœbae	1	8	...	9
<i>Bilharziasis</i> —				
Urines ... ..	...	2	...	2

APPENDIX B—continued.

GENERAL BACTERIOLOGY.

Urices for organisms	...	...	...	...	394
Pus for organisms	...	...	...	...	25
Catarrh of respiratory tract for organisms	...	...	...	...	19
Blood for organisms	...	...	...	...	14
Knee fluids for organisms	...	...	...	...	4
Cerebro spinal fluids for organisms	...	...	...	...	25
Faeces for organisms	...	...	...	...	15
Pleural fluids for organisms	...	...	...	...	7
Cervical swabs for organisms	...	...	...	...	4
Vincent's angina (1 positive)	...	...	...	...	5
Hair—trichophyton (1 positive)	...	...	...	...	6
Pus—gums	...	...	...	...	1
Gall bladders	...	...	...	...	2
Ascitic fluids	...	...	...	...	2
Fluid ankle	...	...	...	...	1
Sputum for hooklets	...	...	...	...	1
Fluid—spermatazoa	...	...	...	...	3
Fluid for anthrax	...	...	...	...	1
Swab for sterility	...	...	...	...	1
Catgut for sterility	...	...	...	...	1
Pus for actionmycosis	...	...	...	...	1
Waters	...	...	...	...	475
Milks	...	...	...	...	12

CHEMICAL AND GENERAL.

Blood counts	...	...	...	...	23
Blood for leukaemia	...	...	...	...	20
Blood for pernicious anacmia	...	...	...	...	6
Blood for coagulation rate	...	...	...	...	2
Blood for estimation of urea	...	...	...	...	30
Blood for estimation of sugar	...	...	...	...	47
Urices for microscopic examinations	...	...	...	...	399
Urices for chemical	...	...	...	...	15
Urices for urea contont	...	...	...	...	33
Urices for glucose content	...	...	...	...	9
Cerebro-spinal fluids, microscopic examinations	...	...	...	...	12
Cerobro-spinal fluids, chemical	...	...	...	...	31
Medical-legal	...	...	...	...	8
Faeces for parasites	...	...	...	...	1
Bones for indentification	...	...	...	...	...
Faeces for occult blood	...	...	...	...	1
Stomach and urine for food poisoning	...	...	...	...	...
Material passed P.R.	...	...	...	...	3
Soap for disinfectant valuc	...	...	...	...	1
Disinfectants for co-officiency	...	...	...	...	2

VACCINES.

Bacilluria	...	...	...	...	...	17
Catarrh of respiratory tract	...	...	...	...	...	52
Faeces	...	...	...	...	...	2
Acne	...	...	...	...	...	2
Pyorrhoea	...	...	...	...	...	12
Endometritis	...	...	...	...	...	8
Pyogenic infections	...	...	...	...	...	39
Urethritis	...	...	...	...	...	1
Tonsils	...	...	...	...	...	4
Gall bladders	...	...	...	...	...	2
Blood	...	...	...	...	...	2

1928.

TISSUES AND TUMOURS.

NON-MALIGNANT—115.

Polypus	...	...	...	...	...	3
Leprosy	...	...	...	...	...	2
Inflammatory	...	...	...	...	...	19
Degenerated tissue	...	...	...	...	...	1
Cystic	...	...	...	...	...	13
Papilloma	...	...	...	...	...	3
Fibroma	...	...	...	...	...	5
Haematuria	...	...	...	...	...	2
Tuberculosis	...	...	...	...	...	2
Adenofibroma	...	...	...	...	...	11
Lipoma	...	...	...	...	...	2
Decidual tissue	...	...	...	...	...	4
Chondroma	...	...	...	...	...	1
Lymphadenoma	...	...	...	...	...	3
Granulation tissue	...	...	...	...	...	5
Fibrosis	...	...	...	...	...	11
Fatty degeneration	...	...	...	...	...	2
Lymphangioma	...	...	...	...	...	1
Adenoma	...	...	...	...	...	4
Epithelial hypertrophy	...	...	...	...	...	1
Normal	...	...	...	...	...	21

MALIGNANT—52.

Squamous celled carcinoma—epithelioma	...	...	...	...	...	26
Adeno-carcinoma	...	...	...	...	...	6
Scirrhus carcinoma	...	...	...	...	...	1
Carcinoma simplex	...	...	...	...	...	6
Rodent ulcer	...	...	...	...	...	2
Sarcoma—round celled	...	...	...	...	...	5
Sarcoma—fibro	...	...	...	...	...	2
Sarcoma—giant-celled	1
Sarcoma—melanotic	3

ANIMAL.

Horse's eye	Epithelioma
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APPENDIX C,

School Medical Inspection.

REPORT OF MEDICAL OFFICER, 1927.

Sir,

I have the honour to submit the following report on the work done in connection with the examination of school children during 1927.

From January 1 until May 31 I was on part-time duty only. During January I was engaged in visiting Infant Welfare Centres in the metropolitan area. From February to the end of May seven schools were visited and 595 children examined. From June to December 34 schools were visited and 2,734 children examined, making a total of 41 schools and 3,329 children.

Seven of the schools were small ones on the Peel Estate. The children in these had never been examined, and as there was reason to believe from information received that a number of them had physical defects, it was decided to inspect them.

The results of the examination confirmed the need. The standards of cleanliness in respect of heads (Pediculosis), bodies and clothing were distinctly low except in two schools. At one it could be classed as "very bad."

The surroundings of the homes and schools in this district were disheartening. The soil is fine black sand, and there was a scarcity of water; partly as a result of this, no doubt, 30 children out of 76 had pediculi or nits, or both, and 23 were flea-bitten, some of them extensively so. It was noted, however, that in spite of the adverse conditions a number of the children were clean and well kept, an observation which confirms the oft-repeated comment of medical officers of schools elsewhere, that the chief factor in cleanliness and health is the efficiency of the mother.

Very large numbers of the children had decayed teeth. On account of the comparative inaccessibility of the district, only between 70 and 80 were notified for dental treatment, though many more would have been greatly benefited by it. It is doubtful, unfortunately, that any large proportion of those notified received treatment.

Twenty-four cases of pronounced defective sight, nine of defective hearing, and twelve of rickets were found. One of these last was a child born and brought up in Boulder City.

Quite a number of cases were seen which had not been vaccinated before leaving Europe.

The conditions found in these schools were very similar to those which existed in the metropolitan area when medical inspection was established on a permanent basis in 1917.

The experience was interesting in making apparent to the examiner how great has been the improvement in the latter schools. When inspection is carried on day after day the change to better conditions is so gradual that its full effect is not realised until

another standard presents itself as a basis for comparison.

If we now deal with the other schools examined, it is pleasant to record that the standard of cleanliness, and of attention to the advice given, once more shows a gratifying advance. Particularly is this so in the Fremantle district where my work lies chiefly.

During 1927 8,072 children in the Fremantle area were examined by the nurse, who found the number of those infected with pediculosis to be 760, that is, 9.41 per cent. This is a slightly lower figure than in 1926, when it was 11.2 per cent. For the whole metropolitan area the figure was 9.204. As the nurses were much occupied preparing schools, and one in paying visits to homes, it was not possible to devote so much time to this aspect of this work as during last year. The results are, therefore, all the more gratifying, and show that the parents and teachers are co-operating with the Department much more heartily than was previously the case.

In all the schools more and more attention is paid to personal hygiene, and particularly to the cleansing of the teeth. In some, excellent systems of weekly hygiene charts; in others, weekly records placed on blackboards, enable the children to note how their personal and classroom records compare with those of other children, and classrooms, and arouse a beneficial spirit of interest and emulation.

Exclusive of the 322 seen on the Peel Estate, 2,145 children were of routine ages; 458 were recalls, and 145 were specials without cards; 345 of the recalls had been notified for medical and dental treatment, and 91, or 26.3 per cent., had received it.

It was found, as in former years, that dental attention was very seldom secured. A large number of cases of defective sight, chiefly of a kind not obvious, except by the use of special tests, received no treatment; and defective hearing continues to receive little attention.

While these results are disappointing, they are eventually less so than appears; as, frequently, after the recall has been seen the child's home is visited by the school nurse and the needed treatment is then obtained. Unhappily the defect has meantime, perhaps, progressed, and a less good result follows treatment than would have been the case if the advice had been acted upon at once.

Nurses paid 473 visits to homes in the metropolitan area. In a few cases the parents refused to get any treatment, in 116 cases it was obtained after two visits, and 108 promised to obtain it after a second visit. In 22 cases it was obtained after one visit. There is no doubt that the value of "following up" is great. The advantage of a conversation over a printed or even a written notice is well known, and the results of these visits emphasise its value.

The school grounds, buildings and out-houses were, generally speaking, fairly well kept; some, indeed, very well: a few not well at all, but the majority were passably tidy, and the out-houses are certainly better attended to than in past years.

When you visited America at the invitation of the Rockefeller Trust, and Dr. John Dale left the State to become Medical Officer of Health in Melbourne, I was temporarily appointed Senior Medical Officer for Schools and resumed full-time work. In connection with this I gave two lectures at the Teachers' Training College, but subsequently handed over that part of the work to Dr. Stang. I also gave three lantern lectures to Parents and Citizens' Associations on defects found in school children.

In my capacity as Supervisor of Infant Welfare I paid 80 visits to centres; 48 of these were paid

during the first part of the year, chiefly in January and February when there was little or no school work demanding attention.

Fourteen meetings were attended; most of them were addressed by me in connection with this branch of my work; and I was present at the opening of four new centres.

Six lectures were given on the care and feeding of infants to the nurses in training at King Edward Memorial Hospital. Five meetings of the Sisters in charge of Centres were held in the Public Health Department to discuss problems found in their work, and to hear short addresses by Dr. Crisp.

ROBERTA H. M. JULL,

Medical Officers of Schools.

REPORT OF MEDICAL OFFICER, 1928.

Sir,

I have the honour to submit the following report of the work done during 1928. Throughout the year I worked on a part-time basis only, but as I obtained leave of absence from April 30-July 9, in order to visit the Eastern States, I worked full time during the months of February, March and April to overtake the necessary quota.

Thirty-eight schools were visited during the year, and 2,948 children were examined. Twenty of these schools, most of them small ones, and 1,167 children were seen before the end of April, the remainder after the middle of July.

The standard of cleanliness—which is closely related to health—shows a constant improvement in the larger schools which are visited every year, although in some the improvement is slight. In the outlying schools, which are visited by the Medical Officer of Schools only once in two or three years, the percentage of pediculosis is frequently high. The nurses' visits are also necessarily infrequent, although they go to them at least once each year. There is therefore difficulty in bringing pressure to bear upon careless parents unless the teacher is prepared to incur a certain amount of odium in the district by insisting on absolute cleanliness.

The number of mal-nourished children is still noticeable. Many of the cases are due, I believe, to unsuitable food and insufficient sleep, rather than to insufficient food. The high price of milk and its consequent scarcity in many homes is to be deplored, since it is one of the most valuable foods for children. The large numbers of children who are to be seen on the streets, alone or accompanied by relatives, at 10 and even 11 o'clock at night indicate how little their need of long hours of sleep is understood. Parents still need much education on these two points alone.

In the report of one school, which was visited by the members of the Royal Commission on Child Endowment at their own request, there appears the following paragraph: "Of the 65 children seen 18

were of good or average nutrition, N 3; 10 were very good, N 3 plus; 16 were poor, N $2\frac{3}{4}$; 16 very poor, N $2\frac{1}{2}$; 5 were bad, N $2\frac{1}{4}$ or N 2. If the 16 recorded at N $2\frac{3}{4}$ are taken as sufficiently near N 3 to be classed as good, it will be seen that the 16 at N $2\frac{1}{2}$ represent 24.6 per cent., and the 5 at N $2\frac{1}{4}$, or less, 7.7 per cent."

"Similar conditions exist in a majority of our schools and justify the oft-repeated statement that the importance of the correct feeding of children is not recognised by the community in general. Large numbers of children are far from their optimum condition and no reserves for the future are being built up."

The comments made in last year's report upon "recalls" apply to those seen this year. A considerable number of cases of defective sight and defective hearing continue to be neglected, some permanently, others until frequent reminders of the need for treatment have been given. I would again urge the need for a clause in the Health Act to give power to prosecute and fine neglectful parents.

Evidence was seen in several schools of the valuable work being done by the school dentists. Much cleaner mouths were noted, and the preservation by filling of many temporary teeth and of six-year molars which would certainly have been extracted previously.

It is gratifying to realise, on looking back over the eleven and a half years since I was appointed to the position which I am now relinquishing, how much the work has developed, and how great is the progress shown by there now being three full-time medical officers for schools, three school dentists, and three school nurses. In 1917 there was only one medical officer and one school nurse, so only a few schools could be examined each year. Now all the metropolitan schools are visited annually and many of the surrounding ones also, while the country schools are visited once in three years.

The growth of interest in personal and community hygiene has been great among teachers, children, and parents. The most outstanding sign of this is that whereas in 1917 the pediculosis percentage for the metropolitan area was 25 per cent., this year it is 7 per cent.

The appointment of a psychologist and the opening up of two residential schools for mentally defective boys, with the prospect of one being provided for girls in the near future, are also welcome signs of interest in mental as well as physical health.

It is a matter for regret that it has not yet been possible to establish a home in the hills for children suffering from chronic conditions, such as bronchitis and asthma—a home to which they could be sent by the Medical Officers for Schools for such periods as were thought necessary, and where they would be under the supervision of those officers. Such a preventorium would be as valuable in our midst as similar institutions have proved elsewhere, and would give the children sent to them a prospect of good health in adult life. Perhaps my successors may succeed in carrying this scheme to fulfilment: it is certainly needed.

In my capacity as supervisor of Infant Welfare I paid 48 visits to Infant Welfare Centres, and attended the opening of three new ones. Kalgoorlie, Katanning, Narrogin, Wagin, Beverley, York, Northam and Bunbury were all visited and lectures given at most of them on Infant Welfare. Lectures were also given to the nurses at King Edward Memorial Hospital, and several candidates for posts in Welfare Centres examined.

Four meetings of the Infant Health Centre nurses were held.

I gave evidence before the Royal Commission on Child Endowment, and drew up a scheme for dealing with mentally defective persons at the request of Dr. Ernest Jones, who visited all the Australian States on behalf of the Federal Government, to inquire into the subject of mental defectives and their treatment.

The school nurses paid 573 visits to homes during the year and examined the heads of 19,203 children, 1,357 of whom needed to receive notifications for attention to cleanliness.

ROBERTA H. M. JULL,
Medical Officer of Schools.

APPENDIX D,

School Dental Work.

REPORT OF SCHOOL DENTAL OFFICER.

The Commissioner of Public Health.

I beg to submit my report for the year 1927-28.

Our dental work among the children had its origin comparatively recently, since it was in 1926 that I was appointed to the position of School Dental Officer. During 1927 it was impossible, owing to the large area of the State, to attend the schools methodically, so I visited some of the large centres in the country—Collie, Narrogin, Merredin, and Kalgoorlie—and a few of the big metropolitan schools. This gave to the people generally an idea of the work which the Department was prepared to do: if I had confined my visits to an area such as Fremantle and district or Bunbury and district, other parts of the State, distant perhaps 300 or 400 miles, such as Kalgoorlie or Albany, would have known nothing about the scheme.

My work was performed in each school itself. A room was made available and in it a temporary surgery was set up. In thickly populated parts of the world, such as some of the States of America, a permanent clinic is established which attends to the dental needs of school children within easy distance. That would be unworkable in our State of scattered population. In Queensland a railway coach is fitted

up as a dental surgery and travels from siding to siding. This method, in my opinion, is inferior to our own, in that it would entail a tremendous amount of walking (on the part of the children) backward and forward from school to siding. A motor van properly apportioned, would perhaps be a really good way of dealing with the matter, but nothing I imagine could better our own method of working within the school buildings, providing that we could be sure of having a well-lighted room, however small it may be.

Good progress was made during the year 1928, since in March Mr. O'Keefe, and in June Miss Ross, were appointed by the Department. These officers commenced duties in metropolitan schools, where they were shown the nature and extent of the work to be done. After gaining the necessary experience they were sent into the country, working systematically through certain districts, as we can now afford to do things in a more methodical way. Miss Ross went along the Geraldton line and Mr. O'Keefe worked down the Bunbury, Busselton and Bridgetown line, while early in the year I myself went to Northam and then down the Albany line as far as Wagin.

I find that much greater interest is now being taken in our work, both by parents and those in charge of schools, even though our presence inflicts a certain amount of hardship upon teachers owing to the limited accommodation. In several cases head teachers have asked me to visit their schools, since they realise the benefits conferred both upon themselves and the children by early dental attention.

If our staff were to be again increased by two or three we should be able to cover most of the country districts as well as the metropolitan and suburban schools.

It might be as well later on to have the headquarters of two or three school dentists established at distant centres, such as Kalgoorlie for the Eastern districts, Katanning for the Great Southern, and Bunbury for the South-West. A scheme such as that would, perhaps, cut down the travelling necessary in working the whole State from Perth.

I spent a fortnight of each year in attending the children at the Fairbridge Farm school. It was wonderful to see how much better were the teeth of the children examined there than those of the children we ordinarily examine and treat throughout the year. The average number of decayed teeth per child at Fairbridge is less than one, while in outside schools it is more than six. I attribute this fact in the main to the plain and wholesome food enjoyed by the children in the institution on the one hand, and on the other to the superabundance of biscuits, cakes, and lollies enjoyed by the children in ordinary life.

At each school we visit we try to impress upon the children, more particularly upon those whose mouths we have treated, the necessity of using a toothbrush after meals, because, although a toothbrush is not an infallible preventive of toothache, it helps to a great degree in combating the progress of caries.

During the time under review 34 country schools, 15 metropolitan schools, and three children's institutions were visited. Details of examination and treatments are given below.

Yours faithfully,

A. G. McKENNA,
School Dentist.

4th February, 1929.

FOR THE YEAR 1927.

Number of children examined ...	...	1,376
Agreed to treatment ...	...	868
No treatment necessary ...	...	208
To be done by private dentists ...	...	168
No reply to forms ...	...	132
		1,376
Treatment was completed for ...	...	754
Treatment was commenced but not completed for ...	...	71
Treatment was not commenced for ...	...	43
		868

OPERATIONS PERFORMED.

Silver amalgam fillings ...	...	578
Copper amalgam fillings ...	...	536
Copper cement fillings ...	...	5
Silver Nitrate treatments ...	...	883
Other treatments ...	...	36
Extractions ...	...	1,993
Mouths cleaned ...	...	44

Average number of decayed teeth per child	4.7
Examination of children between the ages of 8 and 14	
Number examined ...	454
Average number of decayed teeth per child	3.5

FOR THE YEAR 1928.

Number of children examined ...	...	2,238
Agreed to treatment ...	...	1,532
No treatment necessary ...	...	192
To be done by private dentists ...	...	107
No reply to forms ...	...	407
		2,238
Treatment was completed for ...	...	1,303
Treatment was commenced but not completed for ...	...	182
Treatment was not commenced for ...	...	47
		1,532

OPERATIONS PERFORMED.

Silver amalgam fillings ...	...	1,074
Copper amalgam fillings ...	...	2,400
Copper cement fillings ...	...	260
Porcelain fillings ...	...	10
Silver nitrate treatments ...	...	2,281
Other treatments ...	...	33
Extractions ...	...	4,064
Mouths cleaned ...	...	450

Average age of children treated ...	7 yrs.
Number of permanent teeth treated ...	1,209
Number of temporary teeth treated ...	7,906

Average number of decayed teeth per child ... 6.5
Of the total number examined, 1,099 had had previous treatment, involving 3,556 teeth.
Of 192 who needed no treatment, only 70 had never been treated before.

A. G. McKENNA,
School Dentist.

APPENDIX E.

School Children Examined during 1927.

COUNTRY DISTRICTS.

Routines.														Specials.		Recalls.	
Number Examined.		Number Notified.		Number referred for Medical Attention.		Number referred for Dental Attention.		Number referred for Home Attention.		Number referred for Pediculosis.		Percentage referred for Pediculosis.					
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
3,032	3,310	2,401	2,345	804	770	1,164	1,145	1,364	1,560	99	389	...	...	...	...	...	...

School Children Examined during 1927

METROPOLITAN AREA.

Routines.														Specials.		Recalls.	
Number Examined.		Number Notified.		Number referred for Medical Attention.		Number referred for Dental Attention.		Number referred for Home Attention.		Number referred for Pediculosis.		Percentage referred for Pediculosis.					
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
4,051	3,824	3,334	3,209	836	731	2,299	2,203	1,929	2,056	138	428	...	...	44	63	1,031	892

School Children Examined during 1928.

COUNTRY DISTRICTS.

Routines.														Specials.		Recalls.	
Number Examined.		Number Notified.		Number referred for Medical Attention.		Number referred for Dental Attention.		Number referred for Home Attention.		Number referred for Pediculosis.		Percentage referred for Pediculosis.					
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
2,693	2,471	1,874	1,946	657	692	949	979	1,053	1,216	30	153	...	...	...	...	...	...

School Children Examined during 1928.

METROPOLITAN AREA.

Routines.														Specials.		Recalls.	
Number Examined		Number Notified.		Number referred for Medical Attention.		Number referred for Dental Attention.		Number referred for Home Attention		Number referred for Pediculosis.		Percentage referred for Pediculosis.					
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
2,927	2,954	2,381	2,299	747	667	1,515	1,423	1,297	1,362	109	236	...	...	...	...	1,251	1,105

APPENDIX F,

TABLE 1.—Notification of each Type of Infectious Disease received by the Department of Public Health for each month of the Year ended 31st December, 1927.

Month.	Diphtheria.	Typhoid.	Pulmonary Tuberculosis.	Scarlet Fever.	Erysipelas.	Purulent Ophthalmia.	Dysentery.	Malaria.	Beri Beri.
January	24	25	38	16	3	...	1	2	2
February	18	17	34	15	2	...	2	...	...
March	22	19	37	27	5	...	9	...	...
April	32	18	30	33	6	...	4	...	1
May	26	25	30	22	3	...	4	...	1
June	23	7	27	21	4	...	1	3	1
July	22	4	53	25	9	1	1	1	1
August	37	4	38	33	6	...	2	1	1
September	17	8	36	20	8	...	...	1	1
October	20	13	29	22	6	...	1	1	...
November	13	9	29	27	4	...	1	1	1
December	19	11	28	21	5	1	...	1	2
Total	273	160	409	282	61	2	26	11	11

Month.	Infantile Paralysis.	Puerperal Sepsis.	Leprosy.	Dengue.	Encephalitis Lethargica.	Brill's Disease.	Cerebro-Spinal Meningitis.	Hookworm.	Tetanus.
January ... ..	...	2	...	...	1	...	...	...	...
February ... ..	...	2	...	...	...	...	...	...	...
March ... ..	...	2	...	1	1	...	...	...	...
April ... ..	...	...	1	...	...	2	...	...	...
May	1	1	...	2	...	1	...	...	...
June ... ..	...	3	1	...	...	3	...	...	...
July ... ..	...	...	...	...	...	1	1	...	...
August ... ..	...	2	1	1	...	1	...	...	...
September ... ..	...	2	...	4	...	...	...	...	...
October	1	...	...	15	...	5	...	7	1
November ... ..	...	3	1	3	...	1	...	...	1
December ... ..	...	...	...	3	...	...	...	...	...
Total	2	17	4	29	2	14	2	7	2

TABLE 2.—Notification of each Type of Infectious Disease received by the Department of Public Health for each Month of the Year ended 31st December, 1928.

Month.	Diphtheria.	Typhoid Fever.	Pulmonary Tuberculosis.	Scarlet Fever.	Erysipelas.	Purulent Ophthalmia.	Dysentery.	Malaria.	Infantile Paralysis.	Puerperal Sepsis.	Dengue Fever.	Encephalitis Lethargica.	Brill's Disease.	Cerebro Spinal Meningitis.
January	20	15	41	27	2	...	1	3	...	...	...	...	...	...
February	25	4	37	22	2	...	...	...	...	...	6	...	1	...
March	41	12	33	50	3	...	2	...	...	1	...	...	6	...
April	66	11	30	42	2	...	...	...	...	1	...	...	8	1
May	153	18	31	58	4	1	5	1	...	3	...	...	4	...
June	80	18	31	47	4	...	4	2	4	2	1	...	6	...
July	87	6	34	31	5	...	1	...	4	2	...	...	4	...
August	73	5	26	23	9	...	2	4	...	...	1	...	1	...
September	26	4	30	20	12	...	...	1	...	...	...	...	3	...
October	20	6	29	17	3	...	...	...	1	2	...	1	1	...
November	29	5	43	6	...	...	1	1	...	3	...	...	2	...
December	19	9	30	7	1	...	1	2	...	2	...	...	3	...
Totals	639	113	395	350	47	1	17	14	9	16	8	1	39	1

[illegible]

APPENDIX G.

MEAT INSPECTION, 1927.

Animals Slaughtered.				Carcases Condemned.										Part Carcases Condemned.										Organs Condemned.											
Cattle.	Calves.	Sheep.	Pigs.	Emaciation.	Icterus.	Innaturity.	Inflammation.	Morbund.	Pitroplasmosis.	Pyrexia.	Sepsis.	Swine Fever.	Swine Plague.	Traumatism.	Tuberculosis.	Totals.	Abscess.	Actinomycosis.	Inflammation.	Traumatism.	Tuberculosis.	Totals.	Actinomycosis.	Fatty Infiltration.	Inflammation.	Lympho-Adenitis.	Melanosis.	Necrotic Foci.	Parasitic Cysts.	Traumatism.	Tuberculosis.	Miscellaneous.	Totals.		
FREMANTLE DISTRICT.																																			
12,646	...	...	...	...	...	...	16	...	60	4	18	...	...	...	15	21	134	3	67	...	100	126	296	106	18	107	...	25	...	30	2	153	99	540
...	197	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	157,337	1	2	...	1	4	...	9	...	1	...	5	...	6	...	1,525	...	4,349	...	663	...	3,893	10,430
...	...	...	13,545	1	...	...	2	...	...	2	6	...	...	...	...	31	42	1	...	1	...	114	116	...	...	...	...	13	1,305	27	...	...	7	1,353
MIDLAND JUNCTION DISTRICT.																																			
15,655	...	...	...	13	...	...	4	...	4	2	11	...	...	...	12	73	119	12	29	...	72	280	393	86	113	206	...	78	...	62	...	...	24	967
...	733	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	206,050	...	44	...	...	6	7	...	...	...	...	...	...	13	...	70	1	...	...	21	...	22	...	...	...	...	...	...	3,696	...	...	...	8,436
...	...	...	17,779	6	...	...	18	...	...	...	3	...	48	...	4	128	207	10	...	...	7	121	138	...	...	...	...	...	2,187	273	...	...	...	3,268
NORTHAM DISTRICT.																																			
929	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	2	...	4	14	20	...	2	98	...	3	...	3	...	2	15	66
...	90	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	9,280	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	927
KALGOORLIE DISTRICT.																																			
4,132	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	5	7	2	7	...	11	87	107	3	19	54	...	7	...	3	...	75	23	184
...	180	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	26,279	1	1	...	2	1	1	1,001	2	1,134
...	...	...	2,200	...	...	...	4	...	...	...	...	57	...	...	...	4	68	...	...	...	1	19	20	...	...	...	...	...	30	12	...	...	15	123
33,362	1,200	398,946	34,451	64	2	5	51	11	64	9	42	57	48	...	50	263	666	30	106	...	222	766	1,124	195	1,686	917	8,648	948	3,722	9,535	2	628	1,043	27,324	

APPENDIX G—continued.
MEAT INSPECTION, 1928.

Animals Slaughtered.				Carcases.												Part Carcases condemned.					Organs Condemned.								Totals.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Cattle.	Calves.	Sheep.	Pigs.	Emaciation.	Icterus.	Immaturity.	Inflammation.	Moribund.	Protoplasmosis.	Putrefaction.	Pyrexia.	Pleuro-pneumonia.	Scabs.	Swine Plague.	Traumatism.	Tuberculosis.	Totals.	Abscess.	Actinomycosis.	Inflammation.	Traumatism.	Tuberculosis.	Totals.	Abscess.	Actinomycosis.	Partly Infiltration.	Inflammation.	Melanosis.		Miscellaneous.	Necrotic Foci.	Parasitic Cysts.	Pleuro-pneumonia.	Traumatism.	Tuberculosis.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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13,149	362	2	...	1	3	4	7	...	1	42	12	...	8	50	91	3	69	59	65	196	70	90	72	11	...	11	6	1	74	335																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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* From 1-1-28 to 30-6-28.

